



CALIFORNIA STATEWIDE UTILITY CODES AND STANDARDS PROGRAM

2016 Title 24 Codes & Standards Enhancement (CASE) Proposal

ASHRAE – HVAC Equipment Efficiencies Updates

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Pre-rulemaking Workshop: Agenda

- Code Change Overview
- Current Code Requirements
- Measure Impacts
- Summary of Equipment Efficiency Changes
- Typical Practices
- Methodology for Savings Analysis
- Initial Data and Findings
- Specific Stakeholder Requests



Code Change Overview

- The purpose of the proposed measure is to reaffirm Title 24, to meet energy efficiency levels that are already established by other recognized standards or codes.
- The follow standards were reviewed to establish the highest potential efficiency levels:
 - 2013 Title 24
 - ASHRAE 90.1 (2013)
 - 2014 Appliance Efficiency Regulations (Title 20)
 - Code of Federal Regulations



Code Change Overview

- Originally this measure was intended to update Title 24 efficiency requirements for HVAC gas equipment but it was decided to expand its scope to include all HVAC equipment listed in Title 24 Efficiency Tables (both gas and electric).
- Effectively, the proposed measure will update Title 24 efficiencies to match ASHRAE 90.1 (2013), which the DOE is currently adopting.



Current Code Requirements

- 2013 Title 24 requires HVAC equipment to meet efficiency levels established in Tables 110.2-A thru K.
- ASHRAE 90.1 is not a building requirement unless Title 24 specifically adopts it.
- DOE has established HVAC equipment efficiencies that all states must, at a minimum, implement.
- Currently the DOE is reviewing ASHRAE 90.1 to update their efficiency requirements to match ASHRAE 90.1, which states can adopt.



Measure Impacts

- Will impact all building types.
- Applies to new construction and retrofits.
- Applies to all HVAC equipment with efficiency requirements in Tables 110.2-A thru K, but not all tables need to be updated.
- 66 updated values for all the efficiency tables.
- The proposed new Title 24 Efficiency Tables 110.2 A thru K with updated efficiency levels is posted on Title24Stakeholders.com



Summary of Equipment Efficiency Changes

HVAC Equipment	Equipment Category	Proposed Change to Efficiency
Air conditioners	Air cooled and Water cooled	Maintain current EER and Update IEER
Air conditioners	Evaporatively cooled and condensing units	No change
Heat pumps - cooling & heating mode	Air cooled and others	No change
Heat pumps - cooling & heating mode	Water, Groundwater and Ground source	Update EER and COP
Heat pumps - cooling & heating mode	Air-cooled gas engine	No change
Water Chillers	Air cooled and water cooled	Update EER and IPLV
Water Chillers	Air and water cooled absorption	No change
Package Terminal Air Conditioners (PTAC)	For new construction or newly conditioned buildings	Update EER
Package Terminal Heat Pumps (PTHP) - cooling & heating mode	For new construction or newly conditioned buildings and replacements	No change



Summary of Equipment Efficiency Changes

HVAC Equipment	Equipment Category	Proposed Change to Efficiency
Single Package Vertical Air Conditioners (SPVAC)	Both weatherized and nonweatherized space constrained	Update EER and Establishes EER for nonweatherized SPVAC
Single Package Vertical Heat Pumps (SPVHP) - cooling & heating mode	Both weatherized and nonweatherized space constrained	Update EER and COP, and Establishes EER and COP for nonweatherized SPVHP
Heat Exchangers	Liquid-to-liquid plate type	No change
Cooling Towers	Open- and closed- circuit	No change
Condensers	Air cooled and evaporative	Update to Btu / (h x hp)
VRF air conditioners	Air cooled	No change
VRF heat pumps - cooling & heating mode	Air cooled, water, ground and groundwater source	No change
Furnaces	Gas- and oil- fired	No change
Furnaces	Unit Heater, oil-fired	Update Combustion Efficiency
Boilers	Hot water and steam, gas- and oil- fired	No change
Boilers	Steam($\geq 300,000$ Btu/h)	Update Thermal Efficiency*
* Thermal efficiency update for steam boilers ($\geq 300,000$ Btu/h) to take effect 03/02/2020		



Typical Practices

- Current practice is to build to code, based on Code of Federal Regulations, Title 24 and Title 20.
- Building to ASHRAE standards is optional unless Title 24 has adopted it as a mandatory building standard.
- The Code of Federal Regulations is being updated to match ASHRAE 90.1 (2013) efficiencies, effectively making ASHRAE 90.1 mandatory.



Methodology for Savings Analysis

- Energy and Demand Impacts
 - Energy savings and demand impacts are being calculated through a spreadsheet analysis based on incremental efficiency increases for Title 24, market research of new equipment and applicable studies.



Initial Data and Findings

- Current Assumptions:
 - Baseline efficiency will be based on 2013 Title 24.
 - A cost effectiveness analysis will not be required since the proposed efficiencies will be adopted by the DOE which has already been vetted through the ASHRAE standards committee and submitted for public review.
- Initial Findings:
 - Due to recent DOE and Title 20 updates, analysis is still underway.



Stakeholder Meeting Feedback

- Stakeholder meeting held May 20, 2014
 - Updates are a formality since the DOE is updating the Code of Federal Regulations to match ASHRAE 90.1 (2013) efficiency levels.
 - The proposed new Title 24 Efficiency Tables 110.2 A thru K with updated efficiency levels, and a spreadsheet providing details of the table values are posted on Title24Stakeholders.com
 - For more feedback from the meeting, visit Title24Stakeholders.com



Requests from Stakeholders

- We would greatly appreciate any information you are able to provide to assist our efforts:
 - technical information
 - market trends and forecast
 - cost data
- If you would like to provide us with any additional feedback or information, send an email to sebailey@aswb-engineering.com



Questions?

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